

## AFFECTED ENVIRONMENT



### INTRODUCTION

This chapter of the document provides information on cultural resources, natural resources, socioeconomics, interpretation, and visitor use and experience that may be affected by proposals under consideration. Additional background material on Lyndon B. Johnson National Historical Park is included in appendix E; and in published documents listed in the “Bibliography” of this *Draft*

*General Management Plan / Environmental Impact Statement*.

### CULTURAL ENVIRONMENT

The story of how Lyndon B. Johnson’s family and his Texas Hill Country upbringing shaped the values and later the programs and policies of the Johnson administration is one of the primary tenets of the park’s mission. The following section describes the cultural resources that are critical to conveying this story and that may be affected by one or all of the alternatives.

#### Archeological Resources

Human use and occupation of central Texas may date back to at least 9,000 B.C., when small bands of nomadic Paleo-Indians occupied cave shelters or open campsites. Although the Lyndon B. Johnson National Historical Park has not been systematically surveyed for archeological resources, scattered prehistoric remains such as chipping debris, lithic scatters, and projectile points have been discovered within the present-day boundaries of both park districts. In the LBJ Ranch district, isolated prehistoric remains have been found along Bailey Road. In the Johnson City district, prehistoric remains have been found both along the banks of Town Creek, which borders the eastern side of the Johnson settlement area, and in the vicinity of the Taylor house. None of the prehistoric sites was determined eligible for nomination to the National Register of Historic Places following evaluation.

Due to the nomadic nature of tribes in this area and over 100 years of agriculture and ranching, American Indian archeological resources are limited. Much of the previous archeological testing within the park was conducted to either determine the placement of utilities or confirm the location of former buildings and structures. Many of the historic artifacts uncovered during these surveys date from the late 19th century forward and were associated with the occupation and use of the buildings and structures. Available data for the national historical park, as well as for the state historical park — where archeological surveys in 1968 uncovered both prehistoric and historic sites — indicate the presence of both prehistoric and historic occupations in the general area and underscore the need for a systematic inventory and evaluation of the park’s archeological resources.

#### Historic Resources – Buildings and Structures

Lyndon B. Johnson National Historical Park encompasses numerous historic resources that reflect the cultural and social heritage of Johnson or that commemorate or contribute to the historic scene: his grandparents’ first

settlement in the area, his birth and boyhood years, his demanding public life when the LBJ Ranch served as the Texas White House, and finally the retirement years and later burial in the family cemetery. Below is a synopsis of the buildings and structures in the park's two administrative districts. Table 6 presents a more detailed description of each structure, along with background information that illustrates how the structure(s) related to the nation's 36th president.

**Johnson City District.** Major structures in the district include the park headquarters/visitor center, Johnson's boyhood home (where he lived from 1913 to 1931), and the Johnson settlement area, which Johnson's grandfather, Samuel Ealy Johnson, Sr., used as headquarters for his open-range cattle business from 1867 to 1872. The original log house purchased and expanded by Sam Johnson still stands in the settlement area, as do several stone buildings constructed by later property owners.

**LBJ Ranch District.** The focal point of this district is the ranch house, which was purchased by then Senator and Mrs. Johnson in 1951. This was President Johnson's home and served as the Texas White House during his administration. The LBJ Ranch district also encompasses many auxiliary structures associated with presidential communications, transportation, and security, as well as the reconstructed birthplace house, the Junction School, the Johnson family cemetery, an airstrip, and a 35-acre pecan grove. In accordance with President Johnson's wishes, the ranch — with its fields and pastures, show barn, cattle pens, and registered Herefords descended from Johnson's herd — continues to operate as a working ranch rather than a sterile relic of the past.

### Cultural Landscapes

According to the National Park Service's *Cultural Resource Management Guideline* (NPS-28), a cultural landscape is

a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time on the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes making them a good source of information on specific times and places, but at the same time rendering their long-term preservation a challenge.

A draft cultural landscape inventory (levels 1 and 2) — which identifies and documents potential cultural landscapes by providing information on location, size, historical development, character-defining features, and management — was completed for the ranch district of Lyndon B. Johnson National Historical Park in August 1993. A cultural landscape inventory documents up to three scales of information: landscape, component landscapes, and features. A cultural landscape encompasses the largest contiguous area that is potentially eligible for the National Register of Historic Places. Some areas within a landscape may be further documented in more detail as



component landscapes, which are definable physical components of a landscape that either contribute to the overall landscape's significance or are significant in their own right. Features include individual elements that comprise a cultural or component landscape, such as fences, paths, agricultural fields, irrigation systems, or vistas.

The cultural landscape inventory identified the following as among the more prominent elements that contribute to the ranch's primary period of significance, 1963–1973 (the years of Johnson's presidency and later retirement). During this period the ranch was not only the site of the Texas White House but also a working ranch and a haven for President Johnson during the stressful years of his presidency. These elements include the following:

- the gently rolling topography of the Texas Hill Country
- the Pedernales River, which forms the ranch's southern boundary, and the Johnson and H. A. Jordan dams that illustrate the manipulation of water resources
- the large, geometrically shaped agricultural fields, and the field terracing that minimizes soil erosion, controls and directs the run-off of water to a series of "tanks" or ponds, and that facilitates the use of agricultural machinery
- the ranch house complex, including the hangar and landing strip and other ancillary buildings associated both with Johnson's presidency and the working ranch, as well as the formal plantings, the flower and vegetable gardens, and the views from the house south to the Pedernales River and the surrounding Texas Hill Country
- the show barn complex, which includes several interactive features — the show barn, corrals and run-out pens, scales and loading chute, seven round storage bins, the foreman's house, and the nearby pasture
- the field grasses — predominantly oats, barley, and coastal Bermuda grass — that undulate across large areas of the ranch
- the 35-acre pecan orchard
- the water features, such as the ranch's irrigation structures and systems, as well as the retention tanks or ponds
- the herd of Herefords
- the Johnson family cemetery and its canopy of large live oaks that impart a sense of peace and dignity
- the reconstructed birthplace/guest house and its formal landscaping
- the Junction School, the first building seen by visitors entering the park (The building is also the site of one of Johnson's earliest memories, that of sitting on his teacher's lap and reciting lessons. This building is emblematic of Johnson's lifelong dedication to education and the site of his signing of the landmark Elementary and Secondary Education Act on April 11, 1965.)
- the network of roads (Ranch Road 1, Park Road 49, Bailey Road, and Malechek Road), paths, and fences that tie the ranch together and visually reinforce the distance between areas of the ranch





Because change and continuity have been successfully balanced over the previous three decades, the historic character of the LBJ Ranch has been retained and preserved. The ranch still exhibits continuity of location, setting, design, spatial organization, and land use, and neither the property's association with President and Mrs. Johnson nor its expression of historical significance has been diminished.

Recent changes to the cultural landscape inventory have identified three potential component landscapes in the LBJ Ranch district.

**Texas White House Complex.** The Texas White House complex primarily consists of the ranch house and surrounding gardens and landscaped areas; roads and paths; the poolhouse, Martin barn, Secret Service command post, hangar, communications trailers and other outbuildings; east and west gates; the airstrip; and the Pedernales River. Senator and Mrs. Johnson purchased the ranch house and surrounding acreage in 1951. From 1951 until his death in 1973, Johnson made the ranch house his home when he was not in Washington, D. C. During his presidency, the ranch house also served as the Texas White House. The integrity of the ranch house and ancillary buildings is good, and the spatial organization and circulation patterns of the area, which are the focal point of the ranch, have changed little over the previous years and still reflect the commingling of presidential activity and ranching operations. Many aspects of the ranch house's formal landscaping, which was undertaken during the latter 1960s by Richard Myrick, a prominent Dallas landscape architect, remain intact, especially the curvilinear planting beds and the variety of vegetation that provides screening and four-season interest. The large live oaks, President Johnson's favorite tree, continue to spread their canopies along the front of the residence providing shade and privacy, dominating the grounds of the ranch house, and offering a stark contrast to the large open fields to the north.

**Agricultural Areas.** Agricultural areas consist primarily of the show barn complex, fields and pastures, water tanks, the pecan grove, and associated roads and paths. Of particular note is the show barn complex. The complex, which includes the barn, pens and corrals, scales and loading chute, grain bins, the foreman's house, adjacent fields, and the circulation system that ties the features together, remains little changed from the time of Johnson's presidency and retirement, 1963–1973. The show barn was one of Johnson's favorite places on the ranch, where he made cattle sales and brought visitors to view his registered Herefords. Today, the National Park Service's ranching crew works out of the show barn, continuing the structure's historic use, and the ongoing ranching activities assist the park in fulfilling its objective of providing visitors a feeling for, and an understanding of, the ranching atmosphere that was such an important part of Johnson's life.

**Historic Areas.** Historic areas include the birthplace house, Junction School, Sam E. Johnson ranch house complex, all associated gardens and designed landscape areas, the Johnson family cemetery, the pecan grove between the birthplace house and Sam E. Johnson ranch house, the area between the Junction School and the birthplace house, the Pedernales River, and Park Road 49. Of particular note is the birthplace house. In 1964 President and Mrs. Johnson had the current birthplace house constructed for use as a guest house and the surrounding grounds landscaped by Richard Myrick. Existing trees, most notably the remnants of a pecan orchard, a large American elm referred to as the Johnson family elm, and three large oaks, were gradually supplemented by the planting of trees and shrubs that were either gifts received or were transplanted from other locations:

On the west side of the house near the chimney is a holly that was a gift from former Secretary of the Interior Stewart Udall. The magnolia located north of the house was a seedling brought from George Washington's Mount Vernon, and the magnolia southeast of the house along the path was brought from The Elms, the Johnson's home in Washington during (his) vice-presidency. (Carls and Gardner 1986: 44).

In addition to the tree and shrub plantings, annual flowers were planted extensively along the fence, providing a backdrop of color throughout the growing season and adding variety to the landscape of the birthplace site not found elsewhere on the ranch, except at the ranch house.

Neither the landscaping nor foliage of the birthplace site accurately reflects the historic period of the years of the Johnson family's residency at the original birthplace, 1907–1913. Yet, both the reconstructed birthplace house and the landscaping represent President and Mrs. Johnson's wishes and is their personal imprint upon the site, which is significant in and of itself. As a result, the National Park Service manages the birthplace site in a manner consistent with the ranch's historic period of significance, 1963–1973.

A cultural landscape inventory and subsequent cultural landscape report of the Johnson City district needs to be initiated. One potential component landscape is the area encompassed by the Johnson settlement, but over the past 125 years extensive change has transformed the landscape of the settlement into a mixture of historic scenes. As a result, the landscape of the Johnson settlement may lack the integrity — the ability of the property to convey its significance through the surviving physical characteristics of its historic period — to be eligible for listing as a cultural landscape on the National Register of Historic Places. The dog-trot log cabin in which Lyndon B. Johnson's grandparents lived from 1867 to 1872, and which served as the headquarters for his grandfather's open range cattle driving business, survives, and the nearby reconstructed log cabin smokehouse and privy also add to the historic scene of the 1860s and 1870s. Yet, the other major structures on the site — the James Polk Johnson barn, the N. T. Stubbs well house, and the John Bruckner barn — date from the 1880s and 1890s and are more representative of the region's German immigrant architecture and closed-range ranching and farming. In addition, the well-kept grounds around the log cabin do not yield a sense of a working ranch and “the existing vegetation (of the Settlement) is radically different from what the Johnson's knew in 1867–1872” (Carls and Gardner 1986: 18). Not only is the impact of hundreds of head of cattle on the surrounding vegetation lost, but also the nearby pecan orchard is not of the historic period and nonnative vegetation, such as the numerous Chinaberry trees, now dominates much of the landscape.



The boyhood home complex constitutes a second potential component landscape in the Johnson City district, although it too possesses varying levels of integrity. The rural, small-town location and setting of the property, together with the buildings and structures — the house, the windmill and water tank, the reconstructed smoke-house/shed and privy, and the walkway and informal paths — still collectively reflect the historic scene of the boyhood home's period of significance, i.e., 1922–1925, when Johnson attended high school in Johnson City. However,

(t)he vegetation of the Boyhood Home has changed substantially since the historic period, and the landscape scene is greatly altered. The general impression is that the grounds are now much better kept and more attractive than they would have been during the historic period. From a purely aesthetic point-of-view, the existing landscaping and maintenance is an improvement over what it was during Lyndon Johnson's boyhood years. But from the perspective of history, the grounds do not provide an accurate representation of the historic scene (Carls and Gardner 1986: 38).

The existing landscape is the cumulative result of landscaping undertaken by the Johnsons in 1964 and later by the National Park Service, after the property became part of the Lyndon B. Johnson National Historic Site in 1970. Historically, the grounds would have exhibited a spotty growth of native grasses, rather than the extant St. Augustine grass lawn, and there would have been few ornamental plantings of trees, shrubs, and flowers.

### **Museum Collection**

The museum collection and archives of Lyndon B. Johnson National Historical Park are important park resources in their own right as well as being valuable information to document and support the history, events, activities, and interactions of the Johnson family in the Hill Country. The museum objects comprise a part of the park's story, and their collection is basic to the park's interpretive and resource management programs.

The collection includes original furnishings, farm and ranch equipment, LBJ memorabilia, automobiles, archeological artifacts, photographs, and archival materials. There are currently over 7,400 objects in the museum collection that are documented to the catalog-data level, as well as over 2,800 archeological artifacts and approximately 150 natural history specimens.

Objects from the collection are exhibited at the boyhood home, in the visitor center in Johnson City, and at the birthplace and the hangar carport at the ranch.

### **Ethnographic Resources**

Ethnographic resources are defined by the National Park Service as any "site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS, USDI 1994b: 191). There are no federally recognized Indian tribes traditionally affiliated with the lands of Lyndon B. Johnson National Historical Park, nor are there any known ethnographic resources within the park's boundaries. The nearby community of Fredericksburg, located approximately 15 miles west of the ranch district, was settled by German immigrants during the 1840s.

The community still reflects its Germanic roots, predominantly through folklife and the town's 19th century vernacular architecture.

## NATURAL RESOURCES

### Soils

Soils of the Johnson City district area are shallow and underlain by limestone and marl, characterized as loamy, clayey, stony soils of the Brackett-Purves-Doss Association, on undulating and hilly uplands. These soils have low potential for cultivated crops. Shallow rooting depth, rapid runoff, low available water capacity, small stones, and steep slopes are limitations (SCS, USDA 1979). Also, they have medium potential for recreational uses. Other soil characteristics are moderately slow permeability, low potential for sanitary facilities, limitations on depth to rock, and shrink and swell potential with moisture.

The soils of the LBJ Ranch district are sandy to loamy, gently sloping soils of the Luckenbach-Pedernales-Heatly Association on uplands and terraces. In general, these soils are moderately well drained, permeability is moderately slow, and runoff is moderate. Cropland is a well-suited use of these soils.

Numerous floods have continued to cause bank erosion along the Pedernales River within the LBJ Ranch district. Two projects were undertaken to control this situation. During 1975–76 the north side of the riverbank was stabilized through backsloping and shaping. Then in 1982, 2,450 feet of riverbank on the south side of the river directly across from the Texas White House was shaped and stabilized with rock gabions, petromat, and vegetation consisting primarily of Bermuda grass. Soil erosion has been reduced since this installation, but no follow-up studies have been done to further monitor and evaluate the situation.

At the present time, bank erosion is a concern along the north shore, just upstream from the Texas White House, and below the Johnson Dam, between it and the Junction School, on the north bank of the river. To date, nothing has been done or studied on this issue. Further study and research is needed. Additional gabion placement and bank-sloping may be necessary. There is no current threat to human safety, but bank erosion of an undetermined amount continues.

The two NPS-owned dams (Jordan and Johnson) and associated structures along the Pedernales River undergo periodic maintenance by the National Park Service. While sedimentation from continuing soil and bank erosion, caused by the numerous flash-flooding events, has not been a concern, monitoring of sedimentation is necessary.

### Water Resources and Water Quality

**Surface Water.** There are several surface water resources within the Lyndon B. Johnson National Historical Park, primarily in the LBJ Ranch district. These include the Pedernales River and several prominent impoundments (Jordan and Johnson dams). The total Pedernales River drainage is 1,302 square mile, while the area drained by the river before it reaches the park is approximately 602 square miles (NPS 1982). Numerous other surface waters in the LBJ Ranch district consist of earthen dams and tanks (ponds). Erosion is severe in the Hill Country

because of periodic heavy rains, thin soils, poor percolation, and severe runoff leading to extreme flooding. The Pedernales River is subject to severe flooding, as well as very dry periods.

The Pedernales River generally flows eastward through Gillespie and Blanco Counties then it drains into the Colorado River at Lake Travis in western Travis County, outside of Austin, Texas; from there the flows head southeasterly to the Gulf of Mexico. The Pedernales River drainage is dominantly effluent streams, which receive large amounts of baseflow from groundwater naturally discharged from the Paleozoic and Cretaceous aquifers (State of Texas 1992). The tributaries of this and other large streams are characterized by two dominant types, i.e., perennial spring-fed streams and intermittent streams, which transport storm runoff.

Surface water resources at the Johnson City district include Town Creek, Johnson Pond, and a small spring-fed seep. Town Creek is an intermittent stream, which flows directly through the settlement area of the district. The Johnson Pond is spring-fed and located in the settlement area, as is the small seep. Several other parental streams lie within this district.

In the past Johnson City (Blanco County) used its surface water from the Pedernales River to supplement its groundwater supply. Surface water is also used for irrigation and livestock watering in both Blanco and Gillespie Counties.

The main surface water feature in Gillespie County is the Pedernales River, but numerous tributaries flow within the county. Many of the creeks dry up during periods of drought. Surface water in Gillespie County is widely used as irrigation and livestock water, or for manufacturing.

Based on a surface water supply analysis projected for the year 2030, results indicate that surface water would not be suitable as a primary water source for Gillespie County and/or city of Fredericksburg because there is not enough water to provide a dependable water supply (Hill Country Underground Water Conservation District 1995). The county's water demands would only partially be served, and it would be necessary to rely on ground water; even during minor droughts. Optimally, a conjunctive management of available surface and groundwater supplies would develop, fulfill, and provide sufficient supplies to meet the projected demands. Use of surface water to supplement supply source would help reduce or prevent groundwater depletion, especially during drought conditions.

The Johnson City district does not use any surface water for any purpose. The LBJ Ranch district pumps water from the Pedernales River at two points — one below at the Texas White House and the other below the cemetery.

**Groundwater.** The aquifers (Paleozoic) of central Texas, which include both park districts, provide varying amounts of water to the area. Locally, these aquifers provide minor amounts of water for domestic and livestock supply (State of Texas 1996).

The initial baseflow of the major streams within the seven-county area comes from seeps and springs, primarily from the Edwards-Trinity aquifer (State of Texas 1996). Groundwater in the area is generally available from the strata of Hickory Sandstone, Ellenburger Limestone, Hensell Sand, and Edwards Limestone.

In 1990 the Texas Water Commission (now the Texas Natural Resource Conservation Commission) and the Texas Water Development Board prepared a report proposing ultimately designating a critical area designation for

counties within the Hill Country, including both Gillespie and Blanco Counties. Critical areas are those areas that are experiencing or will experience groundwater shortages, contamination, etc. by the year 2010. As a direct result of this initiative, the Hill Country Underground Water Conservation District was formed to provide some regulatory powers related to water planning.

The Johnson City district primarily uses the city domestic water system with some use of a park well to irrigate the lawns at the boyhood home. The LBJ Ranch district uses eight wells to supply most of the water at the ranch.

**Water Rights.** The natural flows of the surface water streams within the state of Texas are subject to use under an appropriative rights system, which is managed by the Texas Natural Resource Conservation Commission (HCUWCD 1995). Under this system, a permit must be obtained from the commission for the purpose of diverting or storing surface water; thus using the resource to the greatest benefit.

At the LBJ Ranch district land donations included water rights.

Surface water in Gillespie County is used primarily for irrigation and livestock watering, and virtually all of the water rights are permitted for these uses.

On a broader scale, the Lower Colorado River Authority holds senior water rights on the Pedernales River.

**Water Supply Consumption and Demand.** Within a seven-county area, which includes Blanco and Gillespie Counties, groundwater use increased from 1980 to 1992. These counties supplied 65%–73% of the total demand (State of Texas 1996), respectively. Water supply demand is increasing, more so in Gillespie County, due to the increasing population and subsequent demands from a growing Fredericksburg, Texas. Generally speaking, the water supply demand is not as critical an issue in Blanco County as in Gillespie County.

In the year 2000 it is estimated that in Blanco County per capita water consumption can be expected to range from 144 to 193 gallons per capita day (gpcd); while in 2030 consumption is anticipated to range between 152 and 192 gpcd (LCRA 1988).

Water demand in Blanco County for municipal water could range from 1,048 to 1,803 acre-feet in 2000 compared in 2030 to 1,577 to 3,043 acre-feet per year. For Johnson City municipal water consumption in 2000 could range from 281 to 475 acre-feet per year and 520 to 801 acre-feet per year in 2030.

Water demand actual use in 1980 was 799 acre-feet, with a water demand projection of 869 acre-feet in 2030 (LCRA 1988). Therefore, to meet the mining and manufacturing, irrigation and livestock water needs projected, water from both groundwater and surface water sources is necessary.

Groundwater availability within Blanco County has been estimated at 9,121 acre-feet of dependable groundwater each year for the six major aquifer groups in the area. Therefore, because of the estimated total annual groundwater supply is greater than the projected county demands, it appears there may be sufficient groundwater to meet the projected total county demands.

Water supplies are available to meet Johnson City's municipal needs. The city is currently using wells to supply municipal needs, but uses water from the Pedernales River occasionally to supply demand.

HE WAS A SCHOOL TEACHER  
WHO DEDICATED HIS PUBLIC  
LIFE TO THE CAUSE OF EDUCATION, A MAN OF COMPASSION  
FOR THE ELDERLY AND OF CONCERN FOR THE YOUNG; HE WAS  
A PRESIDENT WHO SAW  
AMERICA AS THE GUARDIAN OF  
FREEDOM AND HE ACTED  
ACCORDINGLY.

HUBERT HUMPHREY  
*LBJ: IMAGES OF A VIBRANT LIFE*

In Gillespie County the average per capita water use ranges from 68 to 135 gallons per day (gpd), whereas the Fredericksburg residential per capita use is estimated at 145 to 155 gpd.

Gillespie County relies heavily on groundwater as an irrigation source rather than on surface water. The Texas Water Development Board projects that irrigation demands will level off and remain constant at about 1,500 acre-feet per year. Mining water, though limited, is supplied from groundwater sources. Livestock demands are met equally from groundwater and surface water sources. Annual demand for livestock use is projected at 1,535 acre-feet per year (HCUWD 1995). The projected total water use in Gillespie County for both the city of Fredericksburg and outside Fredericksburg with and without conservation measures is as follows: city of Fredericksburg from year 2000 to 2030 – 2,776 to 4,057 acre-feet/year and 2,674 to 3,659 acre-feet/year, respectively; and outside Fredericksburg from year 2000 to 2030 – 5,213 to 6,019 acre-feet/year and 5,102 to 5,533 acre-feet/year, respectively (HCUWD 1995).

**Water Quality and Monitoring Efforts.** Lyndon B. Johnson National Historical Park has been engaged in water quality monitoring at two sites on the Pedernales River since 1996. The monitoring was initiated in response to park concerns related to nutrient and bacteria contamination from livestock grazing on lands upstream from the ranch. The monitoring is conducted by park staff as part of the Colorado River Watch Network, which is sponsored by the Lower Colorado River Authority. Water quality measurements were taken approximately twice a month for the following parameters: water temperature, pH, dissolved oxygen, total dissolved solids, nitrate nitrogen, phosphates, and fecal coliform bacteria. Preliminary review of these data indicated normal ranges of values for most parameters except fecal coliform bacteria.

Fecal coliform values at the park upstream site (Hodges Dam) ranged from 30 to 5,820 coliform colonies per 100 milliliter (mL). Fecal coliform values at the park downstream site (PR49 High Water Bridge) ranged from 30 to 6,030 coliform colonies per 100 mL. The state of Texas water quality standard for fecal coliform in the Pedernales River is 200 coliform colonies per 100 mL based on a 30-day geometric mean of at least five water samples. The designated uses for the Pedernales River are contact recreation, high quality aquatic habitat, and public water supply. Water quality monitoring of fecal coliform bacteria on a bimonthly basis is not sufficient to determine whether actual water quality standard violations have occurred, or are occurring. The park began monitoring *E. coli* as well as fecal coliform in February 1998.

Other water quality monitoring efforts in the national historical park have addressed effects on drinking water wells from spraying pesticides on nearby pecan groves in the park, related to leaching into the groundwater table. Results from water samples analyzed by a state certified laboratory identified no contamination from organic chemicals in 1995 and 1996.

Another water quality concern in the park is related to bank erosion due to flooding on the Pedernales River. To date, no water quality studies have been conducted to address this issue.

### **Floodplains**

Based on the 1979 Corps of Engineers' *Special Flood Hazard Information Report* studying the flooding along the Pedernales River at the LBJ Ranch district and immediate area, frequency flood profiles were identified for the

2-, 10-, 25-, 50-, 100-, and 500-year floods, including delineation of the 100-year floodplain. Historical records indicate large flood events on the Pedernales River occurred in 1869, 1900, 1944, 1952, and 1978. The September 1952 flood was the largest. Flooding is an ever-present threat.

The area surrounding the Lyndon B. Johnson National Historical Park experiences storms that result in some of the highest rainfall rates in the United States. Generally, the flood-producing storms occur over the Pedernales River watershed occur in the spring and fall. The U.S. Geological Survey has two stream-gaging stations located on the Pedernales River near Stonewall and Johnson City. From the Corps of Engineers' study, stream characteristics for the Pedernales River at the LBJ Ranch district indicate that for the 100-year flood event, peak discharge would be at 220,200 cubic feet per second, 25 feet height of rise above bank full stage, and a velocity in channel of 21 feet per second (Corps of Engineers 1979).

Flash flooding is always a concern within the area. The National Oceanic and Atmospheric Administration's National Weather Service office in Austin, Texas, issues flash-flood warnings for the Pedernales River basin, which includes the two park districts. Flood-warning schemes for the Pedernales Rivers near Stonewall and at Johnson City are provided by the National Weather Service.

Due to the local topography and the hydrography (natural river flows) of the Pedernales River, large portions of lands within both districts of the national historical park partially lie within the 100- and 500-year floodplains. The Federal Emergency Management Agency (FEMA) has mapped the 100-year floodplain, which includes some of the lands in both park districts. Except for the cedar guest house, only uninhabited facilities, primarily at the LBJ Ranch district, lie within the 100-year floodplain, e.g., the Junction School and the reconstructed birthplace. Some additional historic structures and buildings lie within the 500-year floodplain, e.g., the Texas White House, the Secret Service trailers, the converted hangar building, and the Lyndon B. Johnson State Historical Park maintenance facility. There are no critical actions proposed in the 500-year floodplain. The Floodplains map for the LBJ Ranch district delineates the approximate 100- and 500-year floodplains; no floodplain data is currently available for the Johnson City district.

Past 100-year flood events have resulted in some flooding of at least one uninhabited NPS historic structure. During the last major flood (1978), water completely inundated the cemetery, while approximately 2 feet covered the Junction School building floor, with water extending to the base of the reconstructed Johnson birthplace home. Also, at this event, the water level reached the road directly in front of the Texas White House.

## SOCIOECONOMIC ENVIRONMENT

### Population and Economy

**Statewide.** Texas is the secondmost populated state behind California with an estimated population of 18.7 million people in 1995 (U.S. Census Bureau 1995). Since 1990, growth has taken place at an estimated 10.2% pace with most growth occurring in the large metropolitan areas such as Houston, Dallas, San Antonio, Austin, and El Paso. Nearly 84% of the Texas population lives in such metropolitan areas (U.S. Census Bureau 1994).



The Texas population is aging rapidly. In 1990, 39.6% of the population was less than age 25, 33.2% between 25 and 44, 17.1% between 45 and 64, and 10.1% 65 or older. The Texas A&M University, Department of Rural Sociology, projects that the same categories will be 25.7%, 25.6%, 25%, and 23.7% in 2030.

Texas is home to the second largest population of Hispanics (25.5%) and the third largest population of Blacks (11.9%) in America (U.S. Census Bureau 1990). By the year 2030, more than half of the state's population will be non-Anglo, Hispanics representing 45% and Blacks 10% (Department of Rural Sociology, Texas A&M University).

Statewide per capita income in 1995 was \$19,204. The unemployment rate was 6.4% in 1994 with 19.1% of the population below the poverty level (U.S. Census Bureau).

**Blanco and Gillespie Counties.** Lyndon B. Johnson National Historical Park is in the Hill Country of central Texas, a rapidly growing area of the state bordering the Austin metropolitan area on the east and the San Antonio metropolitan area on the south. Although rural, the park is within an hour's drive of both cities.

Both counties are rural, Blanco with 7,651 people and Gillespie with 19,408 people (U.S. Census Bureau 1995). Johnson City, the Blanco County seat, is approximately 50 miles west of Austin and 60 miles north of San Antonio. Its population was 932 people in 1990.

More than 800,000 people live within a 50-mile radius of Johnson City, more than 2.8 million people live within 100 miles, and nearly 9.5 million people live within 200 miles.

The populations of Blanco and Gillespie Counties are significantly older than those of the state as a whole. In 1990, 31.6% of Blanco County and 29.2% of Gillespie County were less than age 25; 26.8% of Blanco County and 24.3% of Gillespie County were between 25 and 44; 21.3% of Blanco County and 22.1% of Gillespie County were between 45 and 64; and 20.3% of Blanco County and 24.4% of Gillespie County were 65 or older. As with the rest of the state, both counties are expected to age rapidly.

Neither county mirrors the state in Hispanic or Black population figures. In 1990 the Blanco County population was 14.1% Hispanic and .9% Black, Gillespie County was 14.1% Hispanic and .2% Black (U.S. Census Bureau 1990).

Per capita incomes in Blanco and Gillespie Counties in 1995 were \$17,372 and \$17,808, respectively, both below the statewide average (Bureau of Economic Analysis 1995).

In 1994 unemployment in Blanco County was 2.8%, and it was 2.4% in Gillespie County (Bureau of Labor Statistics 1994). Major employers within the two counties are Pedernales Electric Cooperative, the National Park Service, the Texas Department of Parks and Wildlife, Central Texas Electric, the Texas Department of Transportation, Hill Country Memorial Hospital, and both county school districts.

Within 50 miles of Johnson City are a host of state parks and other places of interest such as Natural Bridge Caverns, Cascade Caverns, Aquarena Springs, Wonderworld, Lady Bird Johnson Wildflower Center, Canyon Lake, Lake Travis, Lake Marble Falls, Lake Georgetown, Lake L. B. Johnson, Lake Buchanan, Guadalupe River State Park, Blanco State Park, Admiral Nimitz State Historical Park, McKinney Falls State Park, Pedernales Falls State Park, Lyndon B. Johnson State Historical Park, Enchanted Rock State Natural Area, Longhorn Cavern State Park, and Inks Lake State Park.

Fredericksburg, 30 miles west of Johnson City, has become a major regional tourist destination based on its German heritage and serving a mostly weekend crowd of shoppers. Austin, the Texas State capital, is a major tourist attraction with its western music, nightclubs, the University of Texas, LBJ Presidential Library, and the Texas State Museum.

Just outside the 50 mile radius are major national attractions in San Antonio as Sea World of Texas, Fiesta Texas, the San Antonio Riverwalk, the Alamo, and San Antonio Missions National Historical Park.

### **Land Use**

No approved land use plans regulate development in the Stonewall vicinity or in rural areas of Blanco and Gillespie Counties, although both counties have subdivision regulations. Johnson City has a zoning ordinance in effect for the city, but there is no formal land use plan.

Adjacent developments on the north side of the Johnson City district include single-family residential, commercial (retail shops and restaurants), public (U.S. Post Office), and private institutional (Masonic Lodge) land uses. To the south of the district the land uses are predominantly agricultural, with some single-family and multifamily residential development to the southeast. Adjacent to the east are single-family residential development and the commercial operations of the Pedernales Electric Cooperative, which includes their shops, parking, and offices. West of the settlement area of the Johnson City district, land use is mostly agricultural with a small amount (two to three homes) of single-family residential or undeveloped. Since the settlement area is open to views, highway traffic, and noise on the north, it is important to note the potential for incompatible land uses and/or viewshed intrusions to develop on non-NPS properties on both sides of U.S. 290 in this area.

Several proposals for development in the Johnson City area have been identified. However, it is unclear at this time which if any of the proposals would be undertaken or exactly what their impact on the national historical park might be. Two miles west of Johnson City a subdivision of 5,000–6,000 acres has been proposed. Each lot would be approximately 25 acres. Such a subdivision could add 600–900 people to the population when fully developed.

Another proposal is for a conference center east of Johnson City that would also include an airstrip and hotel facilities.

With the recent sale of the feed mill, a restaurant/retail complex on the park's north perimeter, there is a greater likelihood of further development of the property. Parking is already tight in the immediate vicinity and would only become tighter with additional development. Were parking for the feed mill to be developed on the Cox property, it would severely impact the setting of the settlement.

Adjacent land uses at the LBJ Ranch district are less diverse than in the Johnson City district. To the west, east, and north of the LBJ Ranch are agricultural land uses. Immediately south of the ranch is the Pedernales River, and south of the river are public (Lyndon B. Johnson State Historical Park and the local Head Start facility) and private institutional (church) land uses.

Lyndon B. Johnson State Historical Park was established in 1967 as part of the Texas Parks and Wildlife Department. The state park addresses the life of the 36th president of the United States, and the many cultures that contributed to the region's history, most notably Indian, Spanish, and German, and the wildlife of the Texas Hill Country. By agreement among the Texas Parks and Wildlife Department, the National Park Service, and President and Mrs. Johnson, the state historical park provides a location for visitor orientation for both the state and national historical parks and is the departure point for NPS bus tours of the ranch. In addition, the state historical park affords visitors a wide range of recreational activities.

### **Access and Circulation**

Each district of the national historical park has its own means of access and circulation.

The Johnson City district is primarily a walking experience. The visitor arrives at the park via U.S. 290 and is directed by sign to turn south on Avenue F two blocks then right on Lady Bird Lane one block to the entrance to the visitor center. The visitor leaves his/her car at the visitor center, enters the visitor center for orientation and direction, and then proceeds via a self-guided map to walk the rest of the site on city sidewalks or designated trails. Bus visitors arrive essentially the same way except that parking is at Avenue F Street and Lady Bird Lane adjoining the visitor center car parking.

Visitors to the Johnson Ranch and Texas White House complex must first park at the Lyndon B. Johnson State Historical Park visitor center just east of Stonewall, Texas, on U.S. 290. There the visitor receives orientation and purchases a ticket for a guided interpretive bus tour of the ranch. The bus picks up visitors just outside the state historical park's visitor center and conveys them along a route that consists of Ranch Road 1 and Park Road 49 to the ranch. Stops are made at the LBJ birthplace and cemetery and the show barn. Visitors may exit the bus at these sites to walk around and view the structures. Currently, visitors do not exit the bus at the Texas White House complex. The tour continues from the show barn and returns through the English Park and along the Martin Road to the state historical park's visitor center.

### **Visitation**

Lyndon B. Johnson National Historical Park is open everyday except Christmas and New Years Day. In Johnson City the visitor center opens at 8:45 A.M. with the first boyhood home tour at 9:00 A.M. At the LBJ Ranch, a ranger is at the tour coordinator desk by 8:30 A.M. with the first bus tour scheduled for 10:00 A.M.

At the LBJ Ranch district, visitation by the public is measured two ways: the actual count of visitors who purchase a ticket for the bus tour and a less accurate count of those visitors who do not take the bus tour but who spend measurable time with a national historical park ranger. Both counts are taken at the state historical park's visitor center.

Visitation in Johnson City is considerably more difficult to assess because there is no one site through which all visitors are funneled as there is at the LBJ Ranch district. Visitation numbers are measured by actual visitor counts at the park's visitor center and at the boyhood home but estimated for the settlement. Because some



visitors, particularly local visitors, only walk the grounds of the settlement, the park added an electric counter there during 1997. This counter is not as accurate as the hand counts at either the visitor center or the boyhood home but is more accurate than the estimated count before 1997.

The peak year for visitation was in 1973 when 586,533 persons visited Lyndon B. Johnson National Historical Park. Two events probably caused the unusually high visitation: President Johnson's death and the inauguration of the LBJ Ranch bus tours. Visitation has subsequently declined. Visitation in 1982 was 301,274. Visitation in 1996, the last year for which statistics are available, was 136,892, a nearly 55% decline since 1982 and a nearly 77% decline since 1973. Some of this decline has resulted from changes and refinements over the years in the way that the park gathers data and how the data is used to calculate visitation.

Visitation is highest during the period from March through May. This is a period of pleasant daytime temperatures and springtime color, when the famous bluebonnets join with Indian paintbrush to blanket the countryside eventually being replaced by the red and yellow of Indian blankets and buttercups. As the summer heat grows, visitation drops off noticeably. There is a small spike in the fall that peaks in October.

A 1985 NPS visitor study corroborated by more current anecdotal evidence suggests that visitors tend to be middle- to older-aged couples. This may partly result from the inclusion of the park in commercial bus tours conducted throughout the region. Such tours are generally made up of older Americans.

The park develops and provides educational outreach programs to local schools. Currently, these efforts are directed primarily toward the elementary and middle school level. Eventually all children in kindergarten through grade 12 would be included. School groups are scheduled throughout the school year and are a significant component of ranch visitation.

## INTERPRETATION

### Visitor Centers

The park uses two visitor centers, one in Johnson City and the other at the Lyndon B. Johnson State Historical Park near Stonewall. The centers are staffed with rangers and volunteers who provide visitors with information on how best to visit the park, what not to miss, and what guided tours and events are available. Exhibits and films at each center introduce the visitor to Lyndon Johnson and set the stage for exploration of the district. These interpretive media provide opportunities for visitors to see artifacts and photographs that cannot be displayed elsewhere in the park. Brochures, books, and appropriate educational items are available or may be purchased in the visitor center sales areas.

### Tours

Because of access restrictions at the LBJ Ranch and the need to protect park resources in both districts, ranger-led tours have traditionally been a large part of the Lyndon B. Johnson National Historical Park experience. Tours at the ranch and in Johnson City are given throughout each day. Costumed interpretation is available at the Johnson settlement area for a portion of the year as funding permits. Interpretive talks at historic structures and self-guided trails provide additional information and permit the visitor to tailor the visit to match their individual interests.

### Brochures and Site Bulletins

Numerous brochures and site bulletins provide information on principal park programs and resources. Park brochures are an easy means of orienting visitors to the site and providing them with a general overall background and themes. Site bulletins highlight individual themes, points of interest, and/or provide details on the time and location of interpretive programs. Although many visitors do not use these materials until after leaving the site, they serve a useful purpose by allowing visitors to continue to learn about President Johnson and the park well after their departure.

### Wayside Exhibits

Wayside exhibits have been installed in both park districts. These exhibits provide an important means of explaining site-specific features to a visitor. Waysides may describe the history of the area and other significant facts about a feature or location. The wayside may include text, maps, photographs, or audio interpretation.

HE ALWAYS EXPECTS MORE OF  
YOU THAN YOU THINK YOU  
ARE REALLY MENTALLY OR  
PHYSICALLY CAPABLE OF  
PUTTING OUT. IT IS REALLY  
VERY STIMULATING. IT IS ALSO  
VERY TIRING.

MRS. LYNDON B. JOHNSON  
*PRESIDENTIAL ANECDOTES*

## VISITOR USE AND EXPERIENCE

### Johnson City District

Within the Johnson City district are the park's new visitor center, headquarters offices, boyhood home, Johnson settlement, and an education center. The district functions as somewhat of a city park. Many citizens walk the settlement trails for exercise and participate in scheduled special events.

The visitor center provides park visitors their first opportunity to weave together the diverse strands of the park's sites and themes and their relevance to the Johnson life and legacy. This visitor center has two time lines, exhibits, films, an information counter, and an SPMA sales area. The LBJ time line displays information on Johnson's birth, education, rise in political office, presidency (with the two main thrusts of the Great Society and Vietnam), and retirement. The information is presented with photographs, text, audios, and videos. Other permanent exhibits display objects from the presidency and information and pictures describing some of the legislative thrusts of his administration, such as the space program, education, poverty, and civil rights. Two 30-minute films, "LBJ: The President" and "Lady Bird Johnson," are regularly shown in two auditoriums. Special guest lectures and interpretive talks are also given in the auditoriums. Nature walks and walking tours of historic Johnson City originate in the visitor center.

Park rangers at the contact counter in the visitor center provide visitors specific information about Lyndon Johnson, park resources, daily visitor activities, and general information on the surrounding area. Visitors can purchase books or other interpretive items from an SPMA sales area adjacent to the contact counter.

The park headquarters, located in the same building as the visitor center, has a library where park staff, visitors, and academics may view a collection of books and articles related to Lyndon Johnson and the Hill Country. The library has approximately 4,000 volumes and contains nearly 500 oral history interviews with Johnson's friends and relatives.

The headquarters also houses a museum and curatorial storage of objects related to President and Mrs. Johnson and their lives in the Hill Country. Research using the collection may be arranged upon request.

One block north of the visitor center, park rangers give a 20-minute tour of the boyhood home, where Johnson lived during most of his elementary and high school years. West of the visitor center an interpretive trail guides visitors to an exhibit center and the Johnson settlement. On an intermittent basis, visitors can ride to the exhibit center on a bus driven by park interpreters.

The settlement includes the original dog trot cabin in which Johnson's grandfather settled after he arrived in the area to begin his cattle-droving business, as well as later structures such as barns, a cooler house, and a windmill. The exhibit center near the settlement orients visitors to early Texas ranching and farming. When staffing permits, visitors can experience costumed interpretation at the cabin or at the chuckwagon, or they can take a 45-minute ranger-guided tour of the settlement.

Annual events in the Johnson City district include "National Park Week," "The LBJ Birthday Commemoration," "Heritage Crafts Day," and "A Timeless Christmas in Johnson City."

An education center near the visitor center has space for meetings and workshops for teachers, students, and other groups. An education program provides information and curriculum based activities related to President Johnson's life and legacy.

### **LBJ Ranch District**

Within the LBJ Ranch district are the Junction School, reconstructed birthplace, Texas White House, show barn, ranch lands and cattle, and other structures related to Johnson's life in the Texas Hill Country.

Visitors to the LBJ Ranch district generally stop first at Lyndon B. Johnson State Historical Park visitor center where, through a partnership established by the president, they receive orientation on the national historical park and purchase a ticket for the NPS bus tour of the LBJ Ranch. The state historical park auditorium building also has an SPMA sales area, orientation film, and ranger talks.

The LBJ Ranch bus tour is the focal point of the visitor experience in this district. Visitors board the bus outside the state historical park visitor center. A ranger interpreter drives the bus and narrates the tour. Each ranger develops the theme for his/her tour and include discussions of all major resources on the ranch. The first resource on the tour is the Junction School, the first school Johnson attended. A half-hour stop at the birthplace allows the visitor to see Johnson's reconstruction of the original home. At the birthplace stop visitors can also visit the Johnson family cemetery where the president and many other family members are buried. The tour continues past the Texas White House without allowing visitors to exit the bus, as this is still the home of Mrs. Lady Bird Johnson and is under Secret Service protection. The tour proceeds through ranch lands and stops at the show barn, the place where the president showed off his prize-winning Hereford cattle. The 1¼ hour tour then returns to the state historical park.

During the year there are several special programs and events for visitors. Prior to Christmas, Mrs. Johnson attends a tree lighting ceremony that opens holiday activities. In August, President Johnson's birthday is commemorated. Night sky programs and guest lectures are held throughout the year.

